On-Farm Experimentation Community Info No. 8

Feb 3, 2021

On-Farm Experimentation Community (OFE-C) of the International Society of Precision Agriculture (ISPA)

“Houston, we have a (data) problem.”

Farmers struggle to use data for decision-making. A survey of over 1500 farmers demonstrated high rates of data collection but low rates of data usage. Participants to the conference “Identifying Obstacles to Applying Big Data in Agriculture” defined scenarios in which on-farm decisions could benefit from the application of Big Data. Common obstacles identified included errors in the data, inaccessibility of the data, unusability of the data, incompatibility of data generation and processing systems, the inconvenience of handling the data, the lack of a clear return on investment (ROI) and unclear ownership. One solution: Standards or guidelines for farmers on how to collect “good” data should be developed, so that collected data are usable in multi-platform systems, and are underpinned by ground-truth data and proper sensor calibration. The conference was funded by the U.S. Department of Agriculture (USDA) National Institute for Food and Agriculture (NIFA) and was held in Houston, TX, in August 2018. [White, E.L., Thomasson, J.A., Auvermann, B. et al. Report from the conference, “identifying obstacles to applying big data in agriculture”. Precision Agric 22, 306–315 (2021). https://doi.org/10.1007/s11119-020-09738-y]

Data Becomes Really Useful Only When Aggregated - Survey Results

We launched a quick survey in the OFE-C info letter no. 5. To the question, “Do you use a standard for your agronomic data? » 85% answered, “No, but I would be interested,” nobody simply answered, “no” and 15% answered, “Yes.” Among the latter, the following standards were suggested:

- AgMIP / ICASA: Porter, C.H., C. Villalobos, D. Holzworth, R. Nelson, J.W. White, I.N. Athanasiadis, S. Janssen, D. Ripoche, J. Cufi, D. Raes, M. Zhang, R. Knapen, R. Sahajpal, K.J. Boote, J.W. Jones. 2014. Harmonization and translation of crop modeling data to ensure interoperability. Environmental Modelling and Software. 62:495-508. doi:10.1016/j.envsoft.2014.09.004.
- (Dutch) AgroConnect EDI Crop for m2m xml-messaging

There is a growing need to quantify complex interactions of processes for diverse environmental conditions and crop management realities. Any study is worth very little in itself unless its data is being agglomerated with others to express conclusions valid for commercial use. In order to tear the agronomic data Babel Tower down, there is little alternative but to converge on standards, at least for a minimal set of them. The OFE-C will start a conversation on agronomic (management practices or treatments, soil and weather data and measurements of crop responses) standards for data and metadata. Stay tuned!

Thirty-nine Hints for FAIR Data in Agriculture and Nutrition

All data scientists know the importance of good and unambiguous definitions of data dimensions, crucial to all phases of data analysis. However, semantics is often left implicit in the data, the semantic resources used to create the data are not easily accessible, or available in non-standard formats, non (easily) machine-readable – all factors hampering the possibility of reusing data in information systems or integrating it with other datasets and ultimately limiting the interoperability of data. This paper presents recommendations to engage agrifood sciences in a necessary transition to leverage data production, sharing and reuse and the adoption of the « Findable, Accessible, Interoperable, and Reusable » (FAIR) data principles. They deal with the following data related tasks: search, information extraction, data models, data integration and automated reasoning. [Caracciolo, C, et al. 2020. 39 Hints to Facilitate the Use of Semantics for Data on Agriculture and Nutrition. Data Science Journal, 19: 47, pp. 1–12. DOI: https://doi.org/10.5334/dsj-2020-047]

Seeking Great Photos: “Doing” On-Farm Experimentation

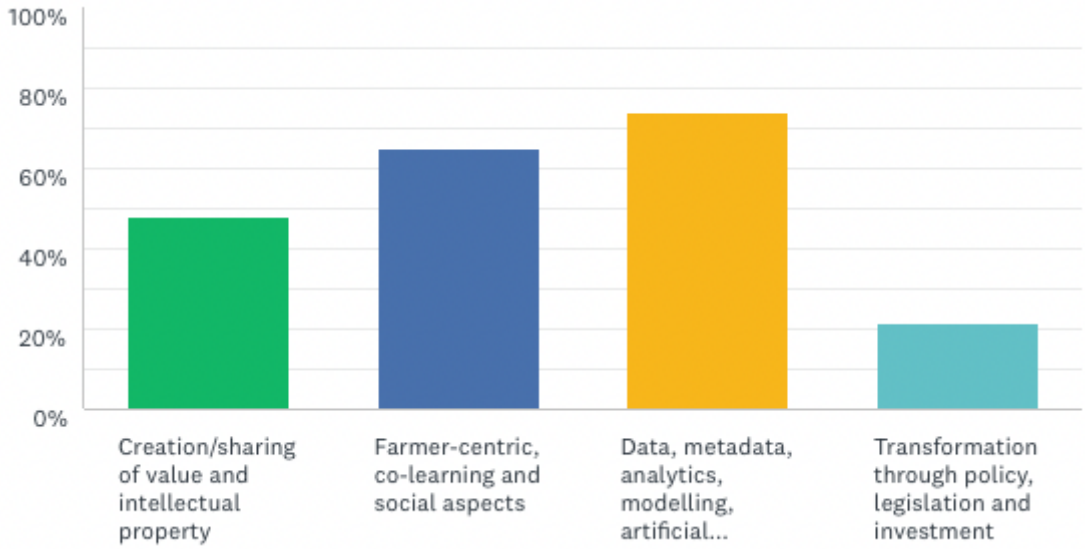
We are seeking free-of-right photos illustrating co-learning by scientists, farmers and professionals around on-farm experimentation and digital opportunities in a broad range of systems and contexts. If you have pictures that eloquently illustrate this idea that you are willing to share, please drop us an email. It will be greatly appreciated!

Which of These Aspects of On-farm Experimentation are of Interest to you? Survey Results

Thanks to the many who have answered our quick survey posted in the On-Farm Experimentation Community Info No. 1. We asked you to select any combination among the following themes:

- Creation/sharing of value and intellectual property

- Farmer-centric, co-learning and social aspects
- Data, metadata, analytics, modelling, artificial intelligence
- Transformation through policy, legislation and investment



All aspects generated interest, but primarily the data and analytics, and the farmer-centric ones. We will soon come back to you with more about how we intend to make progress along those lines.

Should you have something to share with the Community or the Community leaders, let us know here.